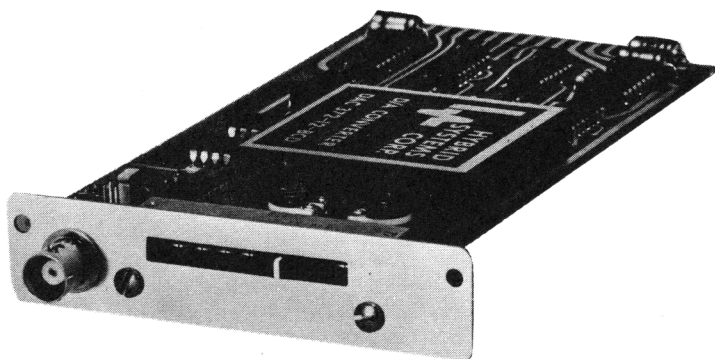


# PHILIPS



## OPERATING AND SERVICE MANUAL

D/A CONVERTER

# PM 9687

9446 096 870.1



740615/1/01

Ordering number of this manual  
9499 460 07411

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### 1. General

The PM 9687 converts the digital information of the counter/timer PM 6650 into an analogue signal.

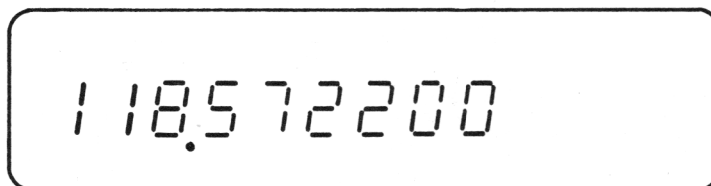
The unit consists of one plug-in card which is fitted in the same place as the BCD output unit PM 9684 (refer to section VI-4 of the operating manual PM 6650).

### 2. Technical data

Output	A BNC connector provides the analogue output from the 3 selected decades.
Decade selection	Any 3 consecutive digits or the 2 least significant digits can be selected with an 8-positions slide switch.
Accuracy	0.2 % of full scale.
Linearity	0.1 %.
Output level	1 V, 100 mV or 10 mV selectable on circuit board by programming jumpers.
Output impedance	200 $\Omega$ (1 V and 100 mV positions) 20 $\Omega$ (10 mV position)

### 3. Function of digit selector

DISPLAY



DIGIT NO.	9	8	7	6	5	4	3	2	1
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The digit selector on the PM 9687 can be set to the two least significant digits (1–2) or to any of three consecutive digits (1–3, 2–4, 3–5, and so on).

Example: display shows 118.572200. To obtain analogue representation of 8.57, set digit selector to "5–7".

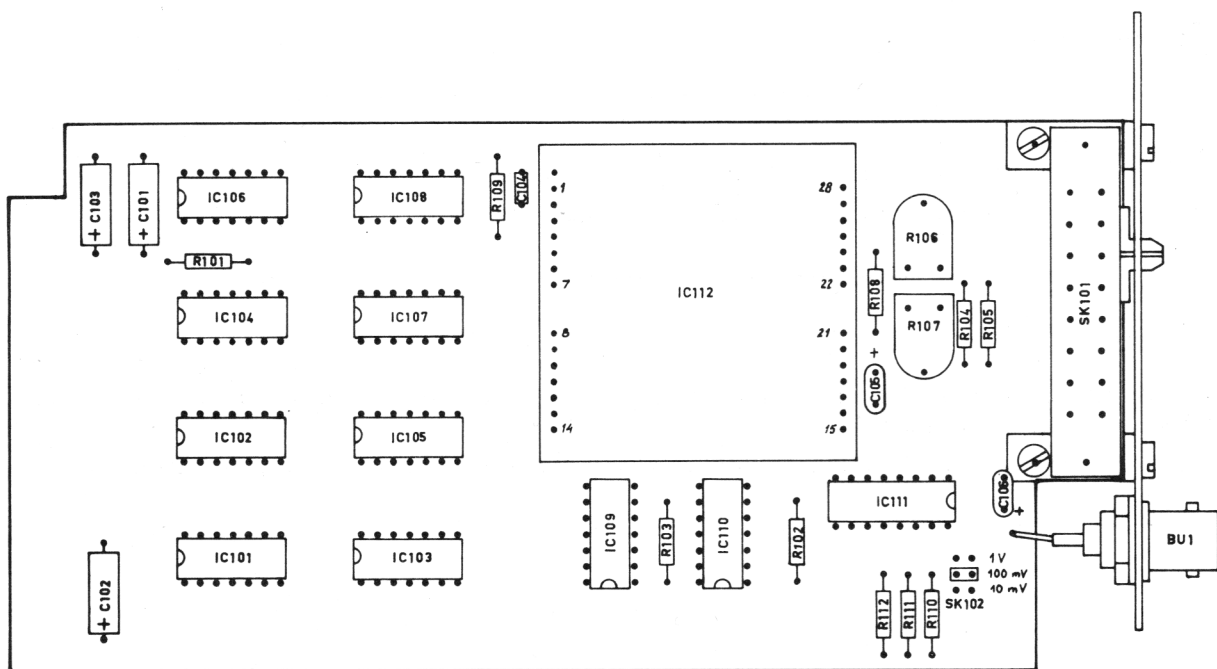


Figure 1. Component layout PM9687.

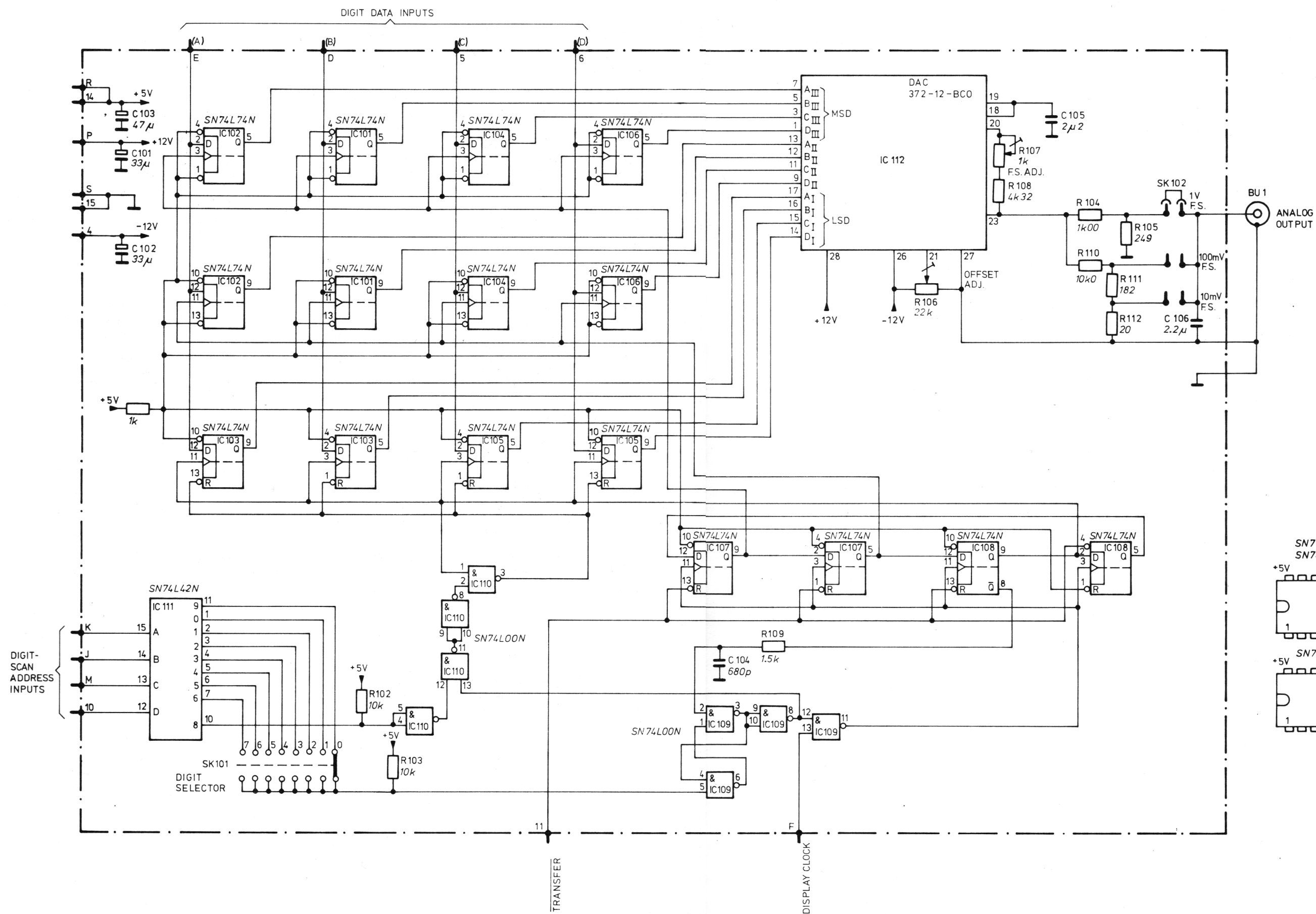


Figure 2. Circuit diagram PM9687.

## Parts lists

## PM 9687

### Resistors

No.	Ordering number	Value	Tolerance (%)	Description
R101	4822 110 63107	1K	5	Carbon
R102	4822 110 63134	10K	5	Carbon
R103	4822 110 63134	10K	5	Carbon
R104	5322 116 50747	1K	0.5	Metal film
R105	5322 116 54357	249 $\Omega$	0.5	Metal film
R106	5322 101 14069	22K	20	Carbon trimming potm
R107	5322 100 10112	1K	20	Carbon trimming potm
R108	5322 116 54608	7.5K	1	Metal film
R109	4822 110 63112	1.5K	5	Carbon
R110	5322 116 50748	10K	0.5	Metal film
R111	5322 116 50754	182 $\Omega$	0.5	Metal film
R112		20 $\Omega$	0.5	Metal film

### Capacitors

No.	Ordering number	Value	Tolerance (%)	Voltage (V)	Description
C101	4822 124 20468	33 $\mu$ F	-10+50	16	Electrolytic
C102	4822 124 20468	33 $\mu$ F	-10+50	16	Electrolytic
C103	4822 124 20461	47 $\mu$ F	-10+50	10	Electrolytic
C104	4822 122 30053	680 pF	-20+80	40	Ceramic plate
C105	5322 124 14038	22 $\mu$ F		16	Electrolytic tantalum
C106	5322 124 14038	22 $\mu$ F		16	Electrolytic tantalum

### Integrated circuit

No.	Ordering number	Description	Remarks
IC101	5322 209 84191	SN74L74N	Texas
IC102	5322 209 84191	SN74L74N	Texas
IC103	5322 209 84191	SN74L74N	Texas
IC104	5322 209 84191	SN74L74N	Texas
IC105	5322 209 84191	SN74L74N	Texas
IC106	5322 209 84191	SN74L74N	Texas
IC107	5322 209 84191	SN74L74N	Texas
IC108	5322 209 84191	SN74L74N	Texas
IC109	5322 209 84044	SN74L00N	Texas
IC110	5322 209 84044	SN74L00N	Texas
IC111	5322 209 80142	SN7442N	Texas
IC112	5322 209 84504	DAC372-12-BCD	Hybrid system corp.

### Miscellaneous

Item	Ordering number	Description
SK101	5322 277 24026	Switch
SK102	5322 263 64007	Jumper
SK102	5322 268 14033	Jumper pin
BU1	5322 267 10004	BNC socket

## QUALITY REPORTING

### CODING SYSTEM FOR FAILURE DESCRIPTION

The following information is meant for Philips service workshops only and serves as a guide for exact reporting of service repairs and maintenance routines on the workshop charts.

For full details reference is made to Information G1 (Introduction) and Information Cd 689 (Specific information for Test and Measuring Instruments).

#### LOCATION

Unit number

e.g. 000A or 0001 (for unit A or 1; **not 00UA or 00U1**)

or: Type number of an accessory (only if delivered with the equipment)

e.g. 9051 or 9532 (for PM 9051 or PM 9532)

or: Unknown/Not applicable

0000

#### COMPONENT/SEQUENCE NUMBER

Enter the identification as used in the circuit diagram, e.g.:

GR1003	Diode GR1003
TS0023	Transistor TS23
IC0101	Integrated circuit IC101
R0....	Resistor, potentiometer
C0....	Capacitor, variable capacitor
B0....	Tube, valve
LA....	Lamp
VL....	Fuse
SK....	Switch
BU....	Connector, socket, terminal
T0....	Transformer
L0....	Coil
X0....	Crystal
CB....	Circuit block
RE....	Relay
BA....	Battery
TR....	Chopper

#### CATEGORY

☐

- 0 Unknown, not applicable (fault not present, intermittent or disappeared)
- 1 Software error
- 2 Readjustment
- 3 Electrical repair (wiring, solder joint, etc.)
- 4 Mechanical repair (polishing, filing, remachining, etc.)
- 5 Replacement
- 6 Cleaning and/or lubrication
- 7 Operator error
- 8 Missing items (on pre-sale test)
- 9 Environmental requirements are not met

Parts not identified in the circuit diagram:

990000	Unknown/Not applicable
990001	Cabinet or rack (text plate, emblem, grip, rail, graticule, etc.)
990002	Knob (incl. dial knob, cap, etc.)
990003	Probe (only if attached to instrument)
990004	Leads and associated plugs
990005	Holder (valve, transistor, fuse, board, etc.)
990006	Complete unit (p.w. board, h.t. unit, etc.)
990007	Accessory (only those without type number)
990008	Documentation (manual, supplement, etc.)
990009	Foreign object
990099	Miscellaneous

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